

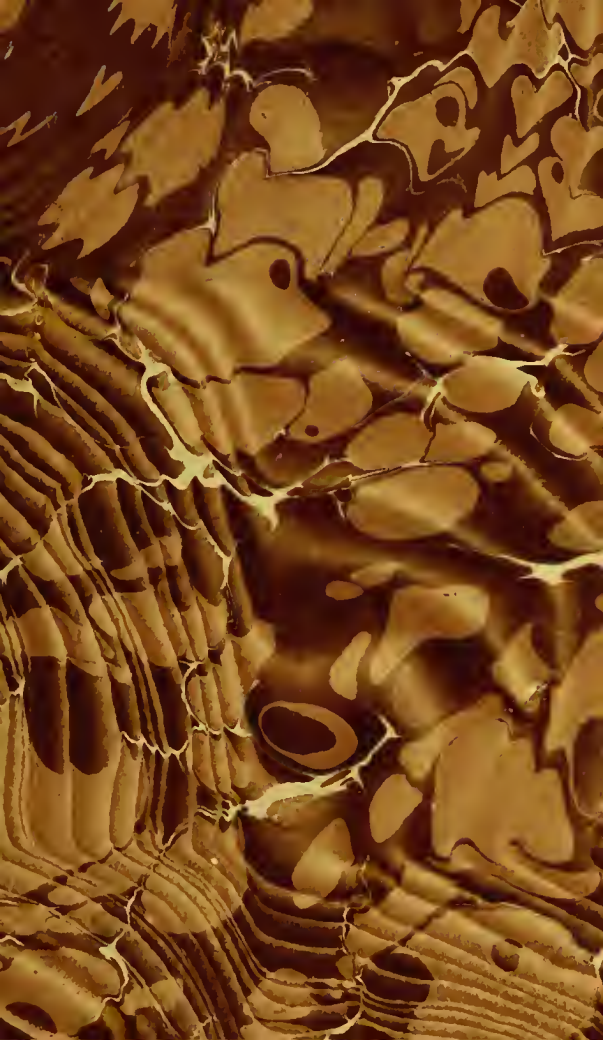


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A
POPULAR VIEW
OF
VACCINE INOCULATION,
WITH THE
PRACTICAL MODE OF CONDUCTING IT;
SREWING
THE ANALOGY
BETWEEN THE
SMALL POX AND COW POX,
AND THE
ADVANTAGES OF THE LATTER.

BY JOSEPH ADAMS, M. D. F. L. S.
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TO HIS ROYAL HIGHNESS
THE DUKE OF YORK,
PRESIDENT,
THE VICE-PRESIDENTS,
THE TREASURER AND GOVERNORS,

OF THE
SMALL POX AND INOCULATION HOSPITALS

THIS LITTLE TRACT,

THE RESULT OF OBSERVATIONS MADE UNDER THE
AUSPICES OF THEIR BENEVOLENT PATRONAGE,
IS MOST GRATEFULLY AND RESPECTFULLY
DEDICATED BY THEIR

FAITHFUL, HUMBLE SERVANT,

THE AUTHOR.

New Bridge Street,
Sept. 1st, 1807.



ADVERTISEMENT.

A VARIETY of interruptions have prevented the earlier appearance of this work, and enabled the Author to trace the progress of the facts stated in the Appendix, No. 3, to this day, (September the first). Hitherto nothing has occurred but the same uniform effects

from successive inoculations. It must, however, be added that five calendar months, which is further back than the beginning of these events can be dated, is a period very inadequate to the establishment of any certain conclusion.

During this delay, other events have occurred which the author conceived it his duty to record with the authorities by which they are supported. It is not for him to determine what effect they may have on the opinion of the reader ; nor has he thought it necessary to revise any part

of the printed work. The first business of a writer is to offer his facts and authorities ; after which every reader may form his own conclusions.

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POPULAR VIEW
OF
VACCINE INOCULATION.

C H A P. I.

Introductory, and Historical Observations.

THERE is every reason to believe that the Small Pox was not known in Europe, before the tenth century; yet, extraordinary as it may seem, we have no certain accounts of its first introduction. This has induced some to believe that it existed from the remotest periods. But we have, in scripture, most accurate descriptions of those dis-

eases, which were deemed unclean or contagious; and none of them are applicable to small pox.

It is not less certain that such of the ancients as describe infectious fevers, were totally ignorant of one property which could not have escaped them, had the small pox been then known—namely, that no person is liable to the disease more than once during life. Thucydides in his justly celebrated account of the pestilence which ravaged Athens with uncontrouled fury, informs us, that few were attacked a second time, and none with severity: and that this appeared a matter of such astonishment, that the convalescents fancied themselves for ever after se-

exempt from all diseases. Now it is well known, that though the constitution is not secured from a second attack of the plague, yet that such a recurrence during the same season, is very uncommon. This is so far from surprising the Europeans in these days, that most of us express our astonishment, that the disease should occur a second time to the same person, at a period however remote. It seems to me impossible to account for the different impression excited by the same event in any other way than by that change in our mode of viewing infectious diseases, which our acquaintance with the small pox has introduced amongst us.

It is highly probable that the

first introduction of this contagion was by the crusades. Ambrose Parey assures us, that after that event, the leprosy became so frequent, that not less than 21,000 lazarettos were erected in different parts of France. It is difficult to conceive that these could be for any other purpose than for the reception of those afflicted with so general and so contagious a distemper as small pox. This is the more probable, because as it was soon found that in populous towns it was scarcely possible to avoid the disease, and that such as had once passed through it, were no longer in danger, many of these lazarettos gradually fell into disuse, till at length the introduction

of inoculation, rendered them no longer objects of general attention.

It has been a matter very often disputed, whether inoculation has lessened the number of deaths by small pox. One thing however is certain that it has contributed much to the comfort and security of all prudent individuals and families; for though it cannot admit of a doubt, that many formerly passed through a long life without the disease, yet such a situation must have proved a constant source of uneasiness to themselves and friends, of restraint from many desirable pursuits, and at times of absolute seclusion from the world.

Happily for the present age, it has pleased Providence to make a

Jenner the instrument of teaching us a mode of passing through this disease, which not only secures the person who submits to it, but in no respect endangers the safety of others. We must not be surprised if this like every other improvement is received with some caution. The enemies of inoculation were much more numerous, and certainly not less respectable than those of vaccination, yet the only thing that retarded the progress of inoculation, was the ignorant manner in which it was conducted. Though the physicians of those days were ready to receive the instructions of Greek slaves, conveyed to them by a female, yet they had not quite mo-

desty enough implicitly to follow their guide. Instead of making inoculation that simple process which the Lady compared to going into the country for the air, they carefully excluded their patients *from* the air. By this unfortunate error the western part of the world was for a long time deprived of the benefit of this practice, till the Suttons revived Sydenham's method of treating the small pox, and superadded to it the advantages of inoculation.

Sir George Baker has given us all he could collect of the Suttonian practice. What was imperfect is supposed to have been added by Baron Dimsdale, and his directions have been pretty generally follow-

ed. The principal points are to inoculate with recent virus taken in an early state of the pustule, whilst the fluid is still limpid; to make only a slight incision, without introducing thread, or any extraneous matter; to purge the patient on the day of inoculation, and repeat it according to his strength, and other circumstances of his constitution, or mode of living, and to reduce the latter, if necessary, from the time of inoculation till the eruption is complete. This, with an attention to any irregular circumstances which might occur, made up the whole that was thought necessary, for conducting the patient through a disease, which, in the ordinary way, was the

terror of every parent, and of every adult, who remained liable to its ravages.

Having given this brief introduction to the history of the disease, and of inoculation, I shall proceed to explain the causes to which we may attribute the advantages of the latter, and then show with how much more certainty they are all secured by vaccination.

CHAP. II.

*On the Causes to which we may attribute
the Advantages of receiving the Small
Pox by Inoculation.*

WITH whatever disease the human body is seized, the effect, like impressions on the mind, is much increased by the suddenness of the shock. This is not confined in either to the first immediate attack, but influences every subsequent stage.

Sydenham first remarked that

the most favourable small pox usually makes its appearance on the third, sometimes the fourth day of the fever; whereas in the most violent, the eruption always appears about the second, or at most the third day. The first pustules, it is well known, appear on the face, and on them only that great master taught us to depend, in forming our future prognostic. If the pustules in the face are numerous and confluent, the patient will be in the utmost danger, however distinct and even sparingly they may appear in other parts of the body.

From all this, which future observation has confirmed, it follows, that the danger depends on the

force and extent of the first shock. That is, if the shock is violent, this will appear by an early eruption of pustules, attended with inflammation proportionate to the actions excited. These pustules will retain the same character throughout their whole progress, and the constitution will suffer with the violence which will attend them in every change. But all this will be confined to the pustules which follow the first shock. If therefore the effect of the first shock could be limited in its extent of surface, it follows that the danger should be proportionally limited.

Such is the object of inoculation, and in proportion as we succeed in it, we secure our patient from dan-

ger. By introducing contagious matter at one particular part, we confine the first shock to that part. Though therefore the inflammation may be violent, and the pustules confluent, yet the space they occupy on the arm, is small compared with the surface of the whole face. And though these pustules will retain their character throughout their whole progress, yet being neither numerous, nor occupying a large space of the skin, the constitution is little affected by the changes they go through. Hence it is easily understood that even should the eruptive fever be considerable, yet the secondary fever, as Sydenham calls it, or the fever at the turn, so much dreaded in the casual dis-

ease, is scarcely felt under inoculation.

It will also be readily understood how important it is to secure the effect of our inoculation, so that the first shock may with certainty be confined to the inoculated spot. Hence the advantage of always using fresh matter, which will be likely to produce a more certain and quick effect on the part. It must be still more important to use the clear fluid taken from the eruption in its early stage, because at that time only it affords the genuine infection. When it afterwards becomes thick, it is mixed with matter formed for the purpose of healing the pustule; and sometimes if taken in its later

stage, it will consist of nothing else, and disappoint the inoculator altogether. If at the same time the person inoculated is exposed to others under the disease, he may catch it in the casual way; and though the inoculated, like any other part on which the skin is punctured, may still show a higher degree of inflammation, yet, if this inflammation does not precede the general eruption, the patient will derive no benefit from it.

Such is the advantage we derive from inoculation, though the causes were unknown probably to the discoverers—certainly to those who first introduced it into England, and even to those who afterwards so far improved it, as to reconcile the

public to such an innovation. The operation of the Greeks, was a simple puncture by a needle and the subsequent treatment, was merely a customary exposure to the common air. The English physicians conceived they made great improvements by large incisions and by introducing a considerable quantity of matter in what they called a state of maturation. In some instances a cotton thread or other extraneous body was introduced with the matter. Not contented with this they exasperated the subsequent disease by confining the patient to hot air and a close apartment. The consequence was that a violent inflammation of the arm from the severity of the operation, sometimes su-

persede the variolous action, so that the whole constitution should be infected without the previous advantage of confining the first shock to the inoculated part. When this happened, the eruption would be as general as in the casual disease, and the subsequent treatment in both cases added greatly to the distress and danger of the patient.

The improvement introduced by the SUTTONS, was to avoid every means of exciting any other action, which might interfere with that which was the object of their operation. Instead, therefore, of large incisions and the insertion of extraneous matter, their incision was as simple as possible, and not only recent contagion was chosen, but

the crude lymph in the early stage of the pustule was preferred. When it became purulent it was found more uncertain ; and in proportion as the inoculated part showed early signs of inflammation, was their prognosis favourable.*

It is surprizing after this, that some of the most experienced writers, who followed the practice of the SUTTONS, should assert that the suppuration at the arm, and at the general eruptions, keep pace with each other. That such is sometimes the case cannot be doubted, but under the most favourable circumstances the inoculated part will begin to dry before suppuration commences at the other pustules,

* Sir G. Baker and Baron Dimsdale as above.

and to scab before the pustules begin to dry.

Should the most unfavourable events take place, and the eruption in the face show the same maturity as in the inoculated part, still the patient has been introduced to the disease under many advantages. He has neither been surprized till the moment of the eruptive fever under ebriety or high excitement from juvenile exercises, or before he is become convalescent from other diseases ; and has withal a certain confidence in the operation which tranquillizes his mind. The mode of treatment also during the progress of the disease was the same as recommended by SYDENHAM.

Inoculation thus restored to its

original simplicity was found so uniformly successful as to bear down all opposition. When we reflect on this sudden and almost universal conversion of the public mind, there is reason to believe that the success of the Suttons was at first greater than subsequent records can produce either in their own practice or that of others. We shall hereafter consider how far it is probable that chance assisted these as well as other discoverers in a manner unknown to themselves.

C H A P. III.

*On the various Kinds of Small Pox, and
on the Approximation of the most favourable to the Cow Pox.*

THOUGH during an epidemic small pox, we see the disease in a variety of forms sometimes even in different individuals of the same families, yet there are certain distinctions which Sydenham first made, and others which have been noticed since his time. That great master first marked the difference

between the confluent and distinct small pox ; and also in the appearance of the disease at different seasons. Though subsequent writers have made other divisions, yet there is one kind which I do not recollect to have seen mentioned by any author. Formerly, when the disease was more common, the kind I allude to, used by the nurses to be called a *white sort*. Such I conceive was the small pox mentioned by Sydenham, which he says left no poek marks : different from what happened in a subsequent part of the season, when even the distinct sort was followed by poek marks in the face.

DR. JENNER in his “ Enquiries
“ into the Nature of the Cow-pox”

speaks of a particularly mild sort, which spread for some time over Gloucestershire. Sydenham makes no other distinction between his two kinds of distinct small pox, than that the mildest left no pock marks ; and DR. JENNER gives no other description of his, than that they never became confluent, that a given number of cases proved as mild as the inoculated disease, and that the lower class of people so entirely lost all terrors of it, that the usual intercourse was maintained, as if no such contagion existed. I suspect from its universal mildness, that this must have been the *white sort* ; the most striking peculiarity in which is, that contrary to what Sydenham observes, both of the

confluent and distinct, the pustules remain white on the face as well as on the rest of the body, till they begin to scab. It is also well known that in distinct small pox, large pustules are considered a very favourable symptom. In the white sort however, the pustules are never very large, but round and uniform in proportion as the disease is well marked. As they increase the upper surface extends over the base, and as they dry the scab becomes nearly globular ; that is, the whole is distinguishable above the skin, without concealing more of the sphere, than what would happen were such a figure actually placed upon the surface. At this time the scab is become of a pale amber, and dries

much harder than in the common distinct disease. From the figure, colour and other properties preserved throughout the whole progress, I should call this kind of small pox the *pearl sort*. The nearer the resemblance is preserved to a pearl, and the smaller the individual pustules, the more perfect is the character. Its deviations may be defined by the earlier approach of the pustule to yellow, and by the greater softness and roughness of the scab.*

* The medical reader will readily understand that he is to impute the first to higher inflammation, and the last to the slough being thicker, and consequently requiring more pus to dislodge it. This is of no consequence in a practical view, the arguments therefore are here omitted, and the reader who wishes to see the whole of the question is referred to *Morbid Poisons*.

It might be suspected, as this variety of appearances in small pox, seems to depend on the degree of inflammation, that it could make no difference with what kind of matter we inoculate, but that the degree of inflammation and subsequent disease, would depend on the state of the person inoculated. It is very certain that when small pox inoculation succeeds as it usually does, the kind of matter is unimportant, because the inflammation at the arm secures the constitution from any subsequent shock, and with proper attention the general eruption is not of sufficient consequence to excite alarm. But it is well known that this is not universally the case. It is therefore desirable to secure a

favourable eruption should such occur, and it seems confirmed by experiments that there is more uniformity between the matter inoculated, and the disease produced, than has hitherto been supposed. By continuing with great caution to inoculate at the hospital from pearl small pox, and afterwards by selecting those arms which had most the appearance of cow pox, we at last succeeded in procuring a succession of arms so nearly resembling the vaccine that an universal suspicion prevailed among the parents, that they were deceived by the substitution of one for the other.—This will be readily understood by the following register :

REGISTER, 1st.

August 14, 1805, William Croft was inoculated, with several others, from a subject who had casual small pox. Croft had diarrhœa three days after he was inoculated, a circumstance in children often favourable for the future disease.

On the 3d day the insertion appeared elevated.

6th, a vesicle.

8th, the vesicle spread.

10th, has a vaccine appearance, with fever.

13th, one hundred and fifty pustules appeared, which passed regularly through their stages somewhat shortened, as often happens in inoculation.

Rogers was inoculated, 26th Au-

gust, from Croft, in two places. Only one took effect, which was perfectly vaccine in all its stages. The child had been previously ill, so that it was difficult to ascertain whether any or what degree of constitutional disorder was produced by the inoculation.

Mary Ann Dobins, having been previously inoculated from Croft without effect, was,

September 2d, inoculated from Rogers.

The arm proved vaccine in all its stages.

On the same day were inoculated from Rogers—

I. Richard Jude. His arm was vaccine in every stage.

On the 13th day, as the arm was

drying, appeared 150 variolous pustules.

II. Eleanor Watts. Arm vaccine.

Pustules appeared on the 11th day.

On the 13th five hundred were counted; all matured, but dried early.

III. Elizabeth Gray. Her arm regularly vaccine to the 8th day.

On the 10th, appeared stationary, in consequence of which inoculation was repeated from Edward Christian's arm, who had been inoculated twelve days.

12th day, the arm first inoculated retains its vaccine appearance, though somewhat jagged with elevations round the vesicle. She had fever the day before, and pustules first appeared on the body.

13th, the arm retains its circumscription, but is yellow. The fever considerable all night.

14th, the first inoculation dry; the second contains a yellow crystalline lymph, with areola. Has upwards of sixty small circumscribed pustules.

15th, arm drying, pustules suppurating.

19th, pustules drying.

22d, scabbed.

IV. Thomas Dyson. His arm was perfectly vaccine in all its stages.

10th day, a few pustules appeared; had been sick on the 9th evening.

12th day, the arm drying.

From Dobins seven were inoculated; of these

Five had no eruption; the arms

were vaccine in all the stages, and in the appearance of the scab.

One had a perfectly vaccine appearance on the arm, areola, and brown scab, with one hundred variolous pustules, which appeared on the 12th day, and began to dry on the 16th ; but the desiccation was not completed till the 29th, when the appearance was horny.

The other had a vaccine arm, somewhat irregular, with fever, but no pustules.

From the last were inoculated four. Of these two had vaccine arms, perfect in all their stages, and without pustules.

One had the vaccine vesicle regular, excepting that the edges sloped in such a manner, that the base was

broader than the apex. The top was, however, flat, and the whole appearance such as occasionally occurs in the genuine vaccine.

The other had small pustules, which dried, as well as the place of insertion, by the 15th.

Elizabeth Gray we have observed had pustules. Two were inoculated from her arm, and two from her pustules.

The two from the arm had the legitimate vaccine appearance.

One from the pustules had fever with general efflorescence.

The other had all the symptoms of vaccination, with the areola; but the contents of the vesicle became yellow before it dried.

It is unnecessary, in this place, to

pursue this register any further. Suffice it to say, that the enemies to vaccination, about this time, excited so great a clamour, that every mother was suspicious lest her child should be clandestinely inoculated with the cow-pox; and even those who saw matter taken from secondary pustules, and applied to the arm, were scarcely satisfied, unless their own children had unequivocal symptoms of small-pox. Reflecting, therefore, that an event of this kind must either occur again, or be unsatisfactory from being unsupported, we contented ourselves with the record preserved in the register, waiting till it should be explained by subsequent occurrences.

This is not the only time we have been interrupted in our attempt to perpetuate a favourable small pox. For though it was urged to the parents, that before the discovery of Cow-pox, the inoculation of the small pox was sometimes only followed by a pustule at the arm, with the attendant fever; yet the suspicions of many were equal to their prejudices: nothing less than secondary pustules would satisfy them, and some even expressed their doubts if the eruption was scanty, or disappeared early.

It should be further remarked that every small pox in proportion to its mildness approaches cow pox in its progress and in its appear-

ance. In the common casual small pox, however confluent it may prove in the face, yet the subsequent eruptions are not only distinct but circumscribed and paler, in both which they approach nearer to the cowpox; and, as was before remarked they are unattended with danger. In the distinct we perceive a still closer resemblance to the vaccine, and in the best of all, or the *pearl* sort, the resemblance is preserved in the face or in the inoculated part. Let us now trace one certain law, which is found to distinguish all other morbid poisons, and see in what manner it is applicable to these.

C. H A P. IV.

Containing presumptive Proofs, deduced from the Laws of all other Morbid Poisons, that the Variolous and Vaccine is the same.

IT is a law in all local as well as constitutional diseases, that no two of them will continue at the same time, in the same place, or in the same constitution. In local diseases this can hardly be questioned, because it would be absurd to say that two different effects could be at the same time produced on the same individual spot. But in

constitutional diseases it might be supposed that two of them might produce their respective actions at the same time, in two different parts of the same body. The contrary has however been proved in so many instances that it is now almost universally admitted. The small pox, in every instance where it has interfered with the measles, is found to be arrested in its progress till the latter has gone through its periods, after which the small pox has recommenced its actions, and required for its completion the full number of days, without reckoning any of those in which it was interrupted by the measles.

The same has occurred in chicken pox. If a person is inoculated today with chicken pox, and to-

morrow with small pox, the inoculation from the latter, will remain unaltered till the chicken pox has completed its progress, after which the small pox will begin, and require as many days to complete its course, as if the insertion of variolous matter had only been made on the day on which the chicken pox began to dry. The same interruption is produced if cow pox is inserted instead of small pox, during the time that the constitution is under the influence of measles or chicken pox. From this it follows that the action of measles and also of chicken pox, is different from the action of small pox or cow pox, and that they cannot be maintained at the same time in the same constitution.

But if small pox and cow pox are inserted at the same time in different parts of the same person, we find no interruption whatever in the progress of either. Both begin and go through their usual courses with the same regularity as if only one of them had been inserted in two different places. If the secondary pustules of the small pox, are late in coming out, it will sometimes happen, that the cow pox inoculation having completed its course, will become the seat of a small pox pustule, or that its whole surface will become variolous. This is easily known by the contents becoming purulent or mattery instead of remaining limpid, a difference which we shall presently have occasion to

remark, makes the only unequivocal distinction between the two diseases.

It was first remarked by the late Dr. Woodville, that if a person is inoculated to-day with small pox and three or four days afterwards again inoculated with the same morbid poison, both the inoculated places will arrive at their height at the same time. 'This is strictly true, and the only difference between the two insertions will be that the last rarely equals in size, though it arrives at the same stage of maturity with the first. The same has also been observed of cow pox, and this is now so well known that the second insertion has been proposed as a test of perfect vaccination.

This will be hereafter considered. My only intention on the present occasion is to offer a further proof of the indentivity of these two morbid poisons. For if small pox is inserted to-day, and the same subject inoculated three or four days after with cow pox, or with cow pox to-day, and three or four days after with small pox, the same consequences will follow as if both insertions had been of small pox only, or of cow pox only; that is, each will arrive at maturity at the same time, and the only difference will be, that the last insertion will produce a smaller pustule or vesicle.

It is true the small pox is generally attended with secondary pustules, and the cow pox so seldom,

that their existence has been disputed. But it is in the memory of all of us that before the cow pox was known, small pox inoculation was considered as perfectly secure without any secondary eruptions, provided the suppuration at the arm, and the symptomatic fever were regular : and secondary cow pox eruptions, however rare, have occurred in the practice of too many impartial observers to be questioned.

It must also be admitted that small pox may be communicated by effluvia and cow pox only by the application of the virulent fluid. But this would only show a higher degree of contagion, in one of two diseases both of which are contagious. Nor is it by any means cer

tain, that there are not different degrees of contagion in different kinds of small pox. Some inoculators whose veracity there is no reason to doubt,* have asserted that their patients with a fresh eruption, played indiscriminately and without danger with other children, susceptible of the disease. Admitting that these men were deceived, that very concession implies a degree of contagion less than usually attends small pox, and consequently approaching nearer to cow pox.

The last objection I shall notice

* See the controversy of the late Dr. WILKINSON and Dr. LETTSOM, with Baron DIMSDALE about the year 1762.

is that small pox is always attended with fever. But in small pox, the degree of fever is uncertain, and oftentimes as mild as in the severest cow-pox.

C H A P. V.

Showing the probability that the first Improvers of Small Pox-Inoculation owed part of their success to the insertion of a favourable kind of Small Pox.

FROM the two preceding chapters it appears, 1st, that small pox has certain varieties, and that these varieties appear sometimes permanent when communicated by inoculation to other subjects.

2dly, That every variety of small pox, in proportion as it proves milder, approaches in its appearance nearer to cow pox.

3dly, That small pox and cow pox do not, like all other morbid poisons producing constitutional effect, interfere with each other, but continue their courses at the same time in the same constitution, and in the same manner as if only one of them was inserted in two different parts of the same subject ; or as if each one was inserted at the same time in a different instead of the same subject.

4thly, That if the two are inserted at different times in the same subject, they produce similar effects as if only one were inserted at two different times.

Lastly, that the only invariable distinction between small pox and cow pox is to be found in the contents of the cow pox continuing crystalline,

whilst those of small pox become purulent, and that the most favorable distinct small pox remains the longest time crystalline.* These circumstances lead me to suspect, as was before mentioned that the Suttons were partly indebted to chance for their early success ; that is, that accident in the first instance directed them to the choice of a pearl small pox, which was afterwards for a long time perpetuated by the manner in which inoculation was

* The medical reader will readily understand that this difference arises from the slough in small pox, which must be separated by suppuration. This slough is always thinner as the disease is more favourable, approaching nearer to the vaccine vesicle, the bottom of which is always clean. See Morb. Poisons.

communicated to new subjects at their establishment. For besides, that the practice has certainly never been, in other hands, so uniformly successful as described at that time by impartial people under the Suttons, there is *incontestible evidence*, that *their own fame* declined, and this we may presume from the failure of that success to which they first owed it. The following extract from Sir GEORGE BAKER'S account of their practice, renders the last still more suspicious.

A letter from a clergyman to SIR GEORGE concludes thus:

“ But danger seems out of the
 “ question, and in ten years practice
 “ our operator has not lost one pa-
 “ tient.” *August 11, 1765..*

Sir George, whose pamphlet is dated 1766, adds, " Since the date of this letter, as I am informed by the same gentleman, two persons have died under the care of this inoculator. First—Cole, a hard drinker, who had been cured of an ague which he had had five or six months. This he kept a secret. The second was a lady who had wilfully neglected every direction, and among other irregularities had taken large quantities of spirit of hartshorn during the disease." See Sir G. BAKER's Enquiry, p. 19.

It is not my intention to doubt the truth of the causes here assigned: but if these two incidents of irregularity occurred in the course

of one year, it is very improbable that none equally flagrant should have happened in the ten preceding years. Besides which, the conduct of the lady, however improper, would not be sufficient to kill any patient under a favourable inoculated small pox.

CHAP. VI.

On the Mode of Conducting Small Pox Inoculation.

HAVING, I trust satisfactorily, explained the causes of all the advantages derived from inoculation, it will not be difficult to apply this reasoning to the manner of conducting the process.

The few directions necessary for this purpose may be comprised under,

1st, the season of the year.

2ndly, the state of the person to be inoculated.

3dly, the choice of variolous fluid.

4thly, the manner of the inserting fluid ; and

Lastly, the treatment of the patient.

1st. The most favourable time of year is, beyond comparison, the summer. The general prejudice against warm weather has arisen from the advantage of cool air in the worst stages of the disease : but it should be remembered that the heat of the atmosphere is in this climate, always below the human temperature, and that in warm weather we have the advantage of the freest circulation. By this only can the temperature of the body be safely reduced,

because how cold soever the weather may be, an atmosphere will be formed round the patient, which if not changed will not long continue to abstract his heat. I am aware of the many advantages which have followed immersion in cold water, and occasional exposure to severe cold; but this is different from long continued frost, under which it is impossible to prevent the patient or nurse from sometimes indulging a propensity for excluding all air. However, in all these cases the most solid proof is experience. We have already seen that Sydenham considered the small pox as more malignant in proportion as it appeared earlier in winter. Baron Dimsdale too remarks that very great injuries had arisen from too long

exposure to cold in the northern parts of the Russian empire. What is most to the purpose, the small pox is always most fatal in the hospital during a severe winter.

But whatever the season may be, no one should venture to the metropolis as long as he is liable to the small pox. A necessity therefore of this kind, or of repairing to any other place where the infection is known, or even suspected to exist, should supersede every objection whether of season, or age or even condition of the patient, which we are next to consider.

2d. Where there is no danger of the casual infection, the subject should not be in very reduced health, and it is generally thought advisable that children under two years of age

should not be inoculated. There are certainly many objections to very young subjects; among the rest the heat to which they are necessarily confined by being so continually attached to their nurses, and the anxiety of the latter, which may alter, or altogether occasion a loss of, their milk. But these should certainly give way to the necessity before remarked, since of 3,000 inoculated last year at the hospital, not less than 2,500 were under two years of age, and all excepting two did well.

3dly. The matter should be fresh, that is, the subject from whom it is taken should be present. Danger may be apprehended, lest by this exposure, the casual disease should be given. But this danger only at-

tends dry matter, or matter taken at too late a period of the disease. For the inoculated small pox is earlier by at least four days in producing the eruptive fever than the casual. Hence the most important consideration in the whole process is to secure the effect at the inoculated part, and this cannot be accomplished by a more certain means than by using the variolous fluid in its crude or limpid state, and immediately as taken on the lancet. If the matter is dry it must be diluted; though this may not lessen its strength, it very much lessens the certainty of its success, because the solution is uncertain; and if not accomplished, the effect on the arm may fail, whilst the effluvia may produce the casual disease.

If a fresh subject cannot be procured but at some distance, the matter should be preserved on glass; and if it is found to be dry when wanted for use, the best mode of dissolving it will be by the saliva of the patient who is to be inoculated.

4th. The fluid may be taken as soon as formed either in the inoculated part or in a subsequent eruption. Where we have choice in the kind of small pox, I am warranted by experience to say that the pearl sort should be preferred, and the fluid taken whilst in a limpid state, for the reasons before suggested.

It is hardly necessary to add that the subject from whom virus is taken should be healthy; for though it is not likely that any other dis-

ease should be inoculated with the variolous, yet every praetitioner would be anxious to satisfy a parent in this partieular. This is another reason to induce us if possible to bring the two subjects together, that there may be no anxieties as to the cause of any diseases which may occur at a future period.

The matter should be introduced by a clean lancet. It is neither very easy, nor at all necessary, to avoid drawing a little blood. If more than one person is inoculated, the lancet should be carefully washed after each; for though there is no probability that the pure small pox virus can be contaminated with any other poison, yet we cannot assert that the healthy juices of one indivi-

dual may not prove deleterious to another.*

It has been thought that the hollow between the muscles is the most convenient part of the arm for inoculation. I have not however seen any particular advantage from this preference, and for some time past have only been careful in inoculating females, to make the incision so high up that the scar need not be exposed should the present fashion continue or be renewed when my patient arrives at age.

It is now found much better to make no preparation before inoculation, the period between the inser-

* The medical reader who has any doubts on this subject is referred to "Morbid Poisons," page 50.

tion and the eruptive fever being amply sufficient. Besides which many inconveniences are sometimes attendant on too low a state, which it is much more difficult to restore, than to reduce high health.

If it is necessary to inoculate a very weakly child on account of the danger of casual infection, it will be right to treat him in the same manner as if no inoculation had taken place, that is, to attend to the restoration of his health. The same may be said of a grown person in reduced health. But in both cases a more than ordinary attention is required during the whole process.

If the patient is in good health, he should be purged on the morning after inoculation. This

should be repeated on the 6th day afterwards, and on the 8th and 10th, unless the strength should appear much reduced, or the progress of the insertion prove backward. The repetition of the purges must afterwards depend upon the symptoms.

As the pustules begin to dry, it is advisable to exhibit two or three purges at the distance of about six or eight days from each other, and also to be careful that the patient does not entirely indulge his craving for food, if it should be such as is usually attendant on recovery. This caution is not confined to small pox, but is found oftentimes necessary during a state of convalescence from other fevers.

C H A P. VII.

On the prognostic Symptoms of the Disease.

HAVING thus gone through the general directions for conducting a patient through inoculated small pox, I shall proceed to mark those symptoms and appearances by which we are to regulate our prognostic.

The most important of these is the appearance on the arm. If that shows a slight blush on the 3d day inclusive from the insertion, we are sure that the operation has succeed-

ed, and in such a manner as to supersede any general infection. The little incision will now show a black appearance, from the blood having hardened upon it. The attendant blush rarely surrounds this black spot, but is usually distinguishable by the naked eye on the 3rd or 4th day, and if the finger is applied over it, a sensible hardness will be perceived below the skin.

This blush gradually increases for the two following days, after which it will be easy to perceive a beginning vesication, or slight elevation of the cuticle resembling very small bladders. By the 8th day the character of the vesicle begins to be formed, but not always with

certainty till the 10th. If the progress has been very favourable, the arm will at this time exhibit a circular elevation, flattened on the surface and surrounded with a circumscribed redness. With this appearance unattended with very high symptoms of fever, we may ensure our patient's safety, and the probability that he will go through the disease without any further trouble, and with no pustules that will mature.

The next favourable appearance is where the elevation of the cuticle is less marked, perhaps less circular, but the line equally defined, with a figure less regular: that is, the circle may not be so true, yet the edges are not jagged

so as to form a different appearance from the rest of the surface.

The complexion is usually blue, and the surrounding redness follows the irregularity in the figure at a considerable distance, but its edges are defined and not shaded. Though in these cases the fever has been somewhat higher, yet we have every certainty that the danger is over with it, and if any pustules appear that they will be at a very late period, without affecting the general health, and probably without maturing.

There is a third appearance that must be accurately distinguished from the confluent arm, which we shall presently describe. The appearance I refer to is where the in-

flammation runs very high, with a surrounding redness, irregular in its figure and shaded at its extremity instead of being circumscribed. When this appears, we must examine the progress with great accuracy ; and if we find a cluster of very small blisters which only run together from their vicinity, but are perfectly distinct at the edges where they are more distant from each other, we may depend upon it that the case will prove favourable, and though the patient may have suffered considerably during the symptomatic fever, yet that he will have no subsequent fever nor probably pustules, and also that the arm will heal without any more trouble.

But if this high inflammation is unattended with any distinct little bladders, particularly if instead of rising above the surface, it seems somewhat depressed with a dusky brown skin as if drawn tight over it, the fever will be at the same time considerable; and though all constitutional danger may subside with it, yet we may expect a deep slough, or mortified part in the arm, which must be carefully attended to. The parents or attendants will be much alarmed as this slough separates to perceive so deep a hole as will be discovered, but there is in reality no danger attending it. All the caution required is to prevent the sore from being fretted by the linen adhering to the discharge.

The remedy is to expose the part to the open air without dressing or covering of any kind : the consequence is a coagulation of the effused lymph by which the part is skinned over ; or if matter has been formed it hardens into a scab, and if left to itself will heal without further trouble.

The only doubtful appearance in the inoculated part is when the progress is slow without much inflammation, and with no surrounding redness. If at the same time pustules should appear, we may be sure the patient will derive no benefit from the inoculation, and the best that we can expect is that the fever may be mild, and the eruptions few and distinct. In all such cases however we are to consider the disease as

the casual small pox, regulating our treatment and forming our prognostic according to the degree of fever and character of the eruption.

C H A P. VIII.

Of the Advantages of Vaccination, above Small Pox Inoculation.

THE cautions we have found it necessary to enumerate are sufficient to show, that no person is inoculated for small pox without anxiety to the practitioner, the patient and his friends.

On the one hand, are we to leave an infant obnoxious to the most dreadful contagion known in these latitudes, or on the other to force him into a disease which, though

generally mild, has sometimes proved formidable, is always attended with an apprehension proportionate to the interest we feel for the patient, and with an uncertainty as to the mischief we may spread around us ? It is no small satisfaction to turn our attention towards a discovery which promises to deliver us from every doubt in a case which so often requires a prompt decision. Such is the cow-pox. Without symptomatic fever, without secondary eruptions, or without danger from either, and also without danger to others, we secure ourselves, our children, or friends. No season need be preferred, no age is improper, and no state of health has been found prohibitory.

I am aware that by some this language will be considered as too unqualified, and that it will be urged, whilst I have dwelt minutely on the disadvantages attending small pox inoculation, all the objections against vaccination have been overlooked. But this is far from my intention, for how much soever we may be disposed to undervalue these objections, it has always appeared to me that they ought to be fairly met and candidly discussed. The first and most important of all enquiries is: Does cow pox introduce dangerous disorders into the human body?

It would appear very improbable that any such danger should exist when we reflect that dairymaids, who

receive this virus in its full force, are proverbially wholesome and robust, or full of what is called rude health. If it should be urged that they receive the contagion from the cow only, it may be answered that the small pox being always communicated from the human race, no advantage can be claimed in that respect over the common mode of vaccination. It should be recollected also from what has been before explained, that true cow pox fluid always retains its crystalline form; whereas in the latter stages, the small pox fluid is mixed with pus or matter the properties of which may sometimes be more uncertain. Besides which, instances of local complaints after casual small pox are greatly

more numerous than after the inoculated, which must lead us to conclude that it is the severity of the disease which excites them, and not the inoculation. After cow pox such complaints are still more uncommon than after inoculated small pox. I can truly say I have met with none, not even a sore arm, from vaccination.

It must however be admitted that there have been a few real cases among the many false ones which have excited alarm, and I shall be glad if by this opportunity I can set the minds of many respectable people at ease on a question which has produced much unnecessary uneasiness, and not a little ill blood.

C H A P IX.

Candid Examination of the Objections to Vaccination.

WHEN an unfortunate event from cow pox has happened to more than one person in a family, it has been imputed to some impurity in the blood, and not to vaccination. Nothing can be more cruel, than the use of so undefined an expression, nor can we wonder if such as are thus calumniated are provoked to retort a language which shows so little delicacy in those who use it. When I mention impurities

of blood, it is to use a word the most general in its acceptation, and consequently the least objectionable. The Evil or *scrofula*, are terms still more disgusting, but they are all equally undefined, and consequently, like all other calamities the extent of which we cannot ascertain, are all equally terrible to the imagination.

It is much to be lamented that such expressions have ever been admitted, and highly disgraceful that they are still retained in medicine. As, however, we shall presently see that the subject is not connected with our present purpose, I shall dismiss it with expressing a wish that those who use such terms

would at least tell us what they mean. All that will be required of us is, that we meet the question fairly; and as it cannot be disputed that in a few instances very serious complaints have followed the insertion of cow pox matter, that we reconcile the admission of these facts with our recommendation of the practice.

It is well known that there are certain peculiarities in the bodily constitution as well as the tempers of individuals, and oftentimes of more than one in the same family. This is particularly seen in the effect certain substances have on the stomach and those organs of the senses which are connected with it. Thus some are almost

poisoned by eating muscles, which to the rest of a party prove innocent. Others are dreadfully affected by honey, of all other substances the most grateful and salutary to the rest of mankind. A well known naval officer deservedly high in rank, when invited to dinner, is obliged to ask before he tastes any of the sweets whether almonds are contained in what is offered him.

The effects produced by the smell of cheese, or the sight of a cat are too well known, to excite much surprize. But such constitutional peculiarities are not confined to these organs. In some families in all other respects healthy, more than one indivi-

dual has been found whose skin is so violently affected by a blister plaister, that a general terror of that valuable remedy has been excited among the whole. To others the application of leeches has produced all the effects of a local poison*.

These pceuliarities are no more remarkable, nor ought they to excite more surprize, than that some families have found small pox invariably severe and often fatal among them, even with all the advantages of inoculation. To others measles have proved equally alarming; and it is well known that the fatality of the ulcerous sore throat to two children in a noble

* Hunter on the Blood, p. 340.

family, was the first circumstance which raised the alarm, concerning scarlet fever, till that time a disease whose very existence was doubted. Nothing of this kind shows any depravity or vitiation in the form or juices of such subjects or family, but only a susceptibility to be affected by these particular substances, in a manner different from most other people.

To show, however, that such unfortunate events are not the effect of inoculation, but arise from the peculiar manner in which some constitutions are affected by certain substances, I shall subjoin the following case from the 3d vol. of *Memoirs of the Medical Society of London* published in the year 1793.

“ Edward Hughes, born in the work-house of St. Bride, a healthy fine child, till the age of rather more than five months, when he was seized with the natural small pox, The pustules were few, large, and full of matter, and were every where perfectly dried off by the ninth day, about which time the left elbow became very much inflamed; and after a few days a large suppuration took place in the cavity of the joint, which seemed, from the quantity of matter, to have perfectly separated the natural attachment between the bones: hardly had this gone its length, but a similar one took place in the other elbow, not less violent than the first—

About the 10th of October the tu-

mor on the left elbow broke, and discharged a great quantity of matter; and left the bones so completely separated, that the forearm might have been twisted round; and seemed almost in danger of being torn off by accident, from the total loss of substance, except diseased skin, and cellular membrane, which were very loose and flaccid, from the previous tumefaction. Scarcely had the mischief begun in the right elbow before similar inflammation appeared in both knees, and in each wrist. The sufferings of the poor little object are not to be described; it gradually languished in this miserable state till October 17th, when it died, aged about seven months." See a paper by Mr. Ba-

ker, Mem. of the Med. Society, Vol. 3. p. 538. An account of the dissection follows, which it was not thought necessary to insert.

This being the third case of the kind that occurred in the practice of one gentleman cannot be considered as uncommon. I have selected it to show the dreadful consequences which sometimes follow the reception of small pox virus without inoculation. The fair inference is, that when such events occur after the insertion of variolous or vaccine fluid in persons previously in health, it is not to be imputed to the inoculation or to any impurity of blood, but to such a peculiarity of constitutions as to be affected by these substances in a manner which could

not be previously known. The only caution that can be offered is to avoid those substances which there is any reason to apprehend may be injurious to ourselves or relations, and if this caution is attended to, there cannot be a question how much the numbers vaccinated will exceed those inoculated with variolous matter.

CHAP. X.

Is Vaccination a Security against the Small Pox.

THE next objection against vaccination is its insecurity in protecting the constitution against the small pox. In answer to this the friends of vaccination urge with much truth that small pox has occurred more than once in the same subject. Those on the other side who are candid enough to admit this, assert that the instances ap-

pear to be more numerous after cow pox.—Let us examine the question impartially.

It is first necessary to remark that the small pox has appeared after cow-pox in two different forms. In by far the most numerous instances so mild, and so deficient in many of its true characters, as to excite a doubt of the reality of the disease. Sydenham, whose authority stands so high, describes no distinct small pox that would turn before the eighth day. But most of those after vaccination turned on the fifth or sixth day. It is therefore highly probable that if similar cases occurred after small pox they would have passed unnoticed, or have remained at least doubtful, or be con-

sidered as chicken pox. But the introduction of vaccination rendered a more accurate enquiry necessary, and the test of inoculating from the pustules has proved the reality of the disease.

We find, indeed, Sydenham speaking of variolous fever which occurred during a small pox epidemic in those who had gone through the discase, and Dr. Macdonald in his *Strictures on Mr. Goldson's cases* assures us that the same has been remarked in many parts of the continent during an epidemic small pox.

It is not difficult to conceive that this may occur in two ways. It is well known that many people who have passed through the dis-

ease are liable to small pox pustules in those parts which come in contact by nursing others. Now without actual contact, if the skin of a person who has had small pox is at all fretted whilst he is exposed to a variolous atmosphere, it is probable that such atmosphere may produce the effect of exciting variolous pustules: or if a person is inoculated under similar circumstances, it would not be at all surprising if those distant parts of the skin which are already inflamed from any other cause should assume the variolous action. The probability of this is confirmed by the rapidity with which these pustules pass through their stages, for it is well known that when a person who has had the small pox is inoculated, if any

local effect is produced, that effect is much earlier in its appearance, and quicker in its progress than when the same operation is performed on one still liable to the disease. But notwithstanding this irregularity the contents of the pustule are in both equally variolous, and will communicate the disease to another by inoculation.

It must be admitted that there is much conjecture in this mode of accounting for the recurrence of small pox after vaccination, but it should be remembered that the thing itself is of less importance than it may seem, because when the disease has occurred in this form it has excited little or no alarm, and produced but little inconvenience.

In a very few instances, however

small pox has occurred after vaccination in so serious a form as to threaten and even to be followed by fatal consequences. The question then will remain whether the same has not as frequently occurred after small pox ? nor do I believe this would have been doubted, had we not, by a most unfortunate error been in the habit of estimating the security of a patient by the severity with which he has passed through the disease. In considering the next objection we shall have occasion to show that the reverse of this opinion might be much better supported.

When the proofs in favour of the security from cow pox were multiplied beyond all dispute, it was

urged by very respectable authority that this security was only for a time. But even this exception will be found analogous to those laws which were discovered in the susceptibility to a second attack of small pox. In the year 1795, was published the first edition of MORBID POISONS. In this work, great pains were taken to ascertain the precise laws of every contagious disease, and after the most accurate enquiry, the author concludes: "It is a law with most of those morbid poisons which produce their effect by a critical fever, that a constitution which has once gone through the action excited by them is no longer susceptible of it. This is the case, *with some few exceptions,*

in small pox, in scarletina, and probably in most other contagious fevers. I say with very few exceptions because some instances to the contrary have been so well authenticated that I am not sufficiently sceptical to doubt that the susceptibility may be so strong in some constitutions as to admit the disease a second time after a certain period.” *

By this extract it will appear not only that it was then admitted small pox might occur a second time in

* See “ Observations on Morbid Poisons,” page 55, 1st Edition, published in 1795. Dr. Jenner’s Account of cow pox; first appeared in the year 1798, and the suspicion of its proving only a temporary security was not published till 1803.

the same person, but that a certain period might be required between the first and second attack, and that such an occurrence was no way imputable to the slight manner in which a subject has passed through the disease the first time, but to so strong a susceptibility in his constitution, as not to be superseded, excepting for a time, by an event which is sufficient to secure others for life. The following case published in the same year (1795), shows that this suspicion rested on a fact as well established as human evidence will admit.

“ History of a second, or a supposed second Small Pox. By Edward Withers, Surgeon, Newbury, Berkshire, and C. M. S.

“ Mr. Richard Langford, a Farmer of West Shefford, in this county, about fifty years of age, when about a month old had the small pox, at a time when three others of the family underwent the same disease, one of whom, a servant man, died with it. Mr. Langford's countenance was strongly indicative of the malignity of the distemper, his face being so remarkably pitted and seamed, as to attract the notice of all who saw him, so that no one could entertain a doubt about his having had that disease in the most inveterate manner ; moreover, it was usual for him also, whenever the small pox happened among the poor of his parish, to attend and assist in accommodating them with all necessaries.

“ On the 8th of May, 1775, I was desired to visit this person, from whom I learned, that about a fortnight before, on overheating himself, he became indisposed, and continued so for two days, when he became well, and continued so until the day before I saw him ; when he was seized with chills, pain of his back and head, &c. &c. with considerable degree of fever. I directed for him such medicines as circumstances indicated, on visiting him the following day I found him much the same, and I directed a continuance of his aperient and febrifuge medicines. I saw him again early on the morning of the tenth, when his fever was somewhat abated, and indeed a mitigation of all his symptoms. The succeeding

day I found him still better, but complaining of a rash, which the family then informed me, they had perceived very early the morning before, but which they forgot to mention to me, and which had escaped *my* notice, his chamber being a very dark one.

“ On examining this eruption, which was now not limited to his face alone, but extended to his arms, breast and body, its appearance so much resembled the small pox, that I told the family I should not have hesitated in pronouncing it to be so, if his having had that distemper had not been so notorious. The next day the eruption was universal; his throat also which he had complained of the day before,

was now become more troublesome, and indeed every other appearance so much favored the idea of the disease being variolous, as to induce me to give the most decided opinion of its being so, and to desire that there might be no communication, or intercourse with any of his friends, who had not had that disease. This opinion was ridiculed, and consequently but little attention paid to the precaution. In the progress of this case, the advancement of the pustules, the swelling of the face and head, and that smell peculiar to the disease, as well as every other circumstance, still more and more confirmed me in the opinion I had given.

“ Reflecting on the singularity

of the case, I desired on the eighth day from the invasion, that a physician might visit him, accordingly Dr. Collet, then a resident in this place, was desired to see him. Considering how necessary it was that the nature of this case should be investigated in the fullest manner, I requested Dr. Hulbert, a physician of eminence here, would attend with Dr. Collet, on my own account. This measure appeared to me the more necessary, as the whole neighbourhood held my opinion in contempt; even Dr. Hulbert, to whom the patient was well known, laughed at my idea of its being small pox; however, both these gentlemen, on visiting the patient, pronounced it to be so. As the

patient himself never could be reconciled to the opinion of his case being small pox, he was disinclined to pursue the means recommended, and his surrounding friends being of the same opinion, were the less inclined to enforce the use of them, and Dr. Hulbert (though desirous of continuing his attendance without any fee) was dismissed after his second visit. Under these disadvantages he had but an indifferent chance of recovery from a bad confluent distemper; he died on the twenty-first day from the seizure.

“ Four of the family, as also a sister of the patient's, to whom the disease was conveyed by her son's visiting his uncle, falling down with the small pox, fully satisfied

the country with regard to the nature of the disease, which nothing short of this would have done : the sister died.

“ This case was thought so extraordinary a one, as to induce the rector of the parish, to record the particulars of it in the parish register.

EDWARD WITHERS.

“ Newbury, March 20, 1791.”*

This case is by no means solitary : but it is unnecessary to multiply such authorities. They are certainly rare, but not more so in my opinion, than severe cases of small pox after cow-pox, and as was before remarked, it is at least

* See Memoirs of the London Med. Society, vol. 4, page 186. Dilly 1795.

probable that those slighter cases have often occurred after small pox without being noticed. Were it otherwise the security from the disease in every form but one so slight as to be with difficulty ascertained, would be sufficient to give a preference to a practice so universally mild as cow pox.

C H A P. XI.

Are the Marks of Vaccination more uncertain than those of the Small Pox Inoculation, and how are we to estimate the Security of Vaccination ?

ANOTHER and much more important objection against vaccination has been drawn from the uncertainty of the process. It must be confessed that the friends of vaccination have been much too forward in accounting for supposed failures by the imputation of an im-

proper, or as they often call it an ignorant mode of conducting vaccination. Even if this were true, it would be easy to show that the same objection may be started against variolous inoculation. I shall only produce one instance which the operator has with much candour, related himself.

“ An account of a singular Fact, in the practice of inoculation of the small pox : by Mr. John Dawson, Surgeon, at Sedbergh, in Yorkshire. Communicated by the same.

“ Read at the college, August 6, 1785.

“ Last spring, I inoculated two children in one family. On the third day there was a slight inflammation around the places of insition.

On the fifth, it was considerably increased ; and the places felt hard, upon being pressed by the finger. I saw them again on the seventh or eighth day ; and then the inflammation was much increased, extending nearly to the breadth of half a crown. Upon my applying a gentle pressure to the inoculated places, matter issued out of them ; with which, as it issued from the arms of both patients, I perfectly saturated a cotton thread. With this thread I inoculated nineteen persons, by first making a slight incision in their arms, with a clean lancet, and then applying a small piece of the cotton thread, and a plaister to retain it upon the place, as is usual. Every one of these had a fever, and

eruption of pustules, at a proper time. But the children from whom the matter was taken, did not sicken, as was expected ; and, on the eleventh day, the inflammation upon [their arms was considerably abated ; and, two or three days after this, there remained nothing but a dry scab. Agreeably to the general opinion of the Faculty, I told the parents, that their children were secure from future infection of the small pox. They, however, insisted upon their being inoculated again ; which was accordingly done, in the arm of each. Contrary to my expectation, their arms began again to be inflamed, and went on in the same manner as they had done before, till about the ninth or tenth day ; when they sickened, had

a smart fever for three days, and then an eruption of a considerable number of variolous pustules.

“ This I aver to be true, how ill-soever it may agree with any pre-conceived theory concerning infection ; and the ignorance of what is obviously deducible from this fact, has, sometimes, brought a discredit upon inoculation. For I know that there have been some instances, where the inoculator, from the *appearance* upon the arm *only*, has pronounced his patients safe from any future attack of the small pox ; and yet, some years afterwards, they have taken that disease in the natural way.

“ *Sedbergh, 19th December, 1772.*

“ P. S. At a proper time, I make

no doubt but that these two children might have been inoculated *from themselves.*"*

In this instance a candid and experienced practitioner, was deceived in conducting small pox inoculation; it is, however, probable that cases of imperfect vaccination were at first much more numerous. This is easily accounted for by reflecting that the safety of the practice induced so many to undertake it who could not be aware of the exactness which is necessary in establishing the true character of every local complaint, and also that the novelty of the subject rendered it difficult even for medical men to acquire

* Medical Transactions, vol. iii. p. 385.

at once all the necessary information. That vaccination, like every thing else, requires certain instructions, cannot be questioned. The discase is, however, so uniform in its appearance, and so regular in its progress as to be described with more certainty and consequently liable to fewer errors, than any other with which we are acquainted. These appearances we shall now proceed to trace, attending to every deviation against which it it may be necessary to caution the practitioner. In doing this it will be proper

1st. To offer every direction concerning the mode of conducting cow pox inoculation.

2dly. To mark the regular stages of the disease ;

3dly, To give directions regarding the treatment,

And lastly, to point out every particular which may render vaccination insecure or doubtful.

The general directions already given in small pox inoculation, as far as they are applicable, may serve in cow pox : but the most important consideration is carefully to avoid using fluid in the smallest degree turbid. True vaccine fluid is so perfectly transparent, that on fine glass, or even on the point of a fine lancet, it cannot always be perceived. For the most part it escapes very slowly from the punc

ture made through the cuticle ; not being like the fluid of a blister contained in a single bag, but in a number of small cells communicating with each other. When it escapes in this gradual manner, it sometimes forms itself into a spherical shape, and retains its figure like a perfectly transparent jelly. There are, indeed, some varieties in this respect depending on the age of the vesicle, and the degree of inflammation with which it was attended ; but there is no exception as to its chrystalline transparency.

It is generally thought best to take the fluid before the eighth day ; but when this is done the vesicle *from which we take it* should be watched till scabbing, for if

without other violence than the above puncture, the contents should become mattery or the scab soft, we ought not to depend on the issue of our vaccination, but to take another opportunity of repeating it.

2dly, The pure matter taken as above, should be inserted at the end of a clean lancet, by a simple incision. It is not always easy nor important to avoid drawing a little blood. No means whatever for retaining the fluid, either of bandage or plaister, being used, the blood, if any escapes, should be suffered to dry on, as the best dressing for the little wound.

On the following day it will sometimes not be easy to ascertain whether our inoculation has suc-

ceeded, but on the next, being the third, inclusive of the day of inoculation, you may perceive a red point which, being pressed by the finger, will give the sensation of a very small hardness immediately under the skin.

On the fourth day the point should be increased, and somewhat shaded or radiated. On the fifth a small vesicle or bladder may sometimes be perceived with the naked eye. On the sixth with still more certainty. This is gradually increased in size, the base rarely exceeding the summit, till the eighth or ninth, when the almost level summit will for the most part, exceed the base. During the whole progress a small indentation will usually appear,

preserving the form of the incision.

Hitherto the appearance is very similar to small pox, and in some cases cannot be distinguished from it. But from this time the difference is easily marked excepting in one kind of small pox which has been already noticed. In all others the inoculated part, however regular it may have proved till the eighth or ninth day, now becomes jagged at its edges, and its contents grow more or less purulent. In the cow pox the circular form continues, or if from the length of the puncture the form should be more oblong, still the edges will be well defined, the contents remaining limpid.

The external skin seems to thicken as the vesicle acquires its full size, and gradually approaches nearer to the amber colour. At other times the skin seems more transparent, and shows a blue tint beneath it. On these occasions the vesicle is flatter. This difference appears to arise from a higher degree of inflammation, in consequence of which the surface below is fuller of vessels conveying red blood, and affords a purplish appearance through the cuticle and lymph.

On one of these or the following day a considerable redness appears round the vesicle; this has been very properly denominated by Dr. Jenner the *areola*, or *small area*,

round the vesicle. If this redness or areola has a well-marked edge at the extremity it never exceeds the boundary it first formed for itself; but if it is deepest immediately round the vesicle and shaded from thence, its extent is much more uncertain; though from the eighth or ninth day the skin appears to thicken, and the vesicle to flatten, excepting round the edge, yet the contents are still limpid. The edge now forms a rim higher than the centre, so that the whole has been very well compared to a ripe mallow-seed.* The surrounding redness ceases from day

* The botanists would say the fruit, or *pericarpium*.

to day, the margin of the mallow-seed shrivels, the centre acquiring a crustaceous, and afterwards a stony hardness, at the same time gradually contracting itself, particularly round its extremities, so that the centre is generally most elevated, and the whole scarcely fills the little cavity in which it is contained. In this state it has been compared to a tamarind stone. This illustration, though far the most part correct, is less so than that of the mallow-seed, because the appearance of the scab is more various. It is, however, if uninterrupted, constantly stony, but varies in colour as much as the different shades of mahogany. In this state it remains sometimes for two or three

weeks, and when it falls off leaves a scar which though not so deep, has in all the cases I have seen, proved permanent like the small pox. From the latter it differs not only in being more superficial, but in being marked with small and somewhat regular indentations. There is some variety in this appearance, which will hereafter be noticed.

When the progress has been so far regular, the patient has every security against the small pox which our present knowledge affords. We shall hereafter take notice of certain deviations distinguishing between such as are consistent with the security of the patient, and such as render it doubtful.

CHAPTER XII.

Of the Mode of Treatment during the regular Progress of Vaccination.

AT the first introduction of vaccination it was customary to use no medical assistance whatever : and without doubt the disease is for the most part so simple as to require none. But when inflammation from any cause is excited, and as must be the case in vaccination if the operation succeeds, it is not always possible to ascertain how far it may

extend. It is therefore advisable to make use of those means which experience has taught us are found useful under such a state of the system or part. As nothing can be apprehended for the first week, it is enough to give a purge according to the strength of the subject about the sixth day after the insertion. This must be repeated, attending to the above circumstances and the degree of inflammation, particularly whilst the areola is forming. It is not less necessary to watch to the process of scabbing. It is well known that the healing of every sore is sometimes attended with high constitutional irritation, and though there is less danger of this in cow pox as the complaint is

of short continuance, yet it should be always regarded. Two or three gentle purges at the interval of a few days, is never hurtful to a strong subject: with delicate children a greater degree of caution is necessary, and in cases of very low health, the bark may be given with or without an occasional purge.

Should the surrounding inflammation, though it may remain circumscribed, be such as to excite alarm, by the uneasiness of the patient, or even from the unnecessary terrors of those around who may be unaccustomed to the sight, I have always found it sufficient to apply a cold table spoon moving it gently over the part. Should the metal acquire the heat of the

heat of the skin before any relief is perceived, it should be changed for another, and so on in succession. But I have never found it necessary to continue the operation long enough to overheat the second spoon.

Having thus given every necessary direction for conducting the common process of vaccination, I shall subjoin a few remarks on those events for which, though they rarely occur, the practitioner should always be prepared.

CHAP. XIII.

*Containing Deviations from the customary
Laws of Vaccination.*

WHENEVER we find it difficult to ascertain on the third day by the marks already described, whether our operation has proved successful, we should first examine the general state of health. If any symptoms of fever occur, we may be sure that the effect of vaccination is super-

seded by some other disease; and if our patient has been exposed to the measles or chicken pox the probability is, that he may go through one of those diseases before the progress of vaccination commences. In this manner the vesicle after being formed, may be arrested at any future period before the sixth day and afterwards resume its action when the cause which interrupted it ceases. If the patient has been exposed to small pox and the feverish disposition should arise from that cause, the cow pox insertion will rather be hastened in its progress. It will afterwards proceed with the small pox pustules retaining its proper figure, but without

that surrounding redness which marks its genuine character.

But if we find no progress in the arm after the third day, nor any symptoms of fever we should examine whether our patient has any other local complaints about him. Whether he has eruptions of any kind, and if it should be an infant, about the ears particularly. Whatever may be the issue of our examination we should repeat our insertion, as it cannot be attended with any injury. It will often happen that the second inoculation will not only succeed, but that the first will begin its progress at the same time, and both will go through the regular stages together. On

all these occasions a more than ordinary attention is necessary to the progress of the vesicle, for these are the cases which have brought vaccination into the greatest discredit.

It will sometimes occur that after the inoculated part has proceeded to a certain height with its true character, it will suddenly assume the purulent appearance of any other eruption about the body. In this case we cannot expect the constitution to be secure, as the vaccine vesicle has not gone through its necessary stages. At other times the vesicle will complete its stages and at the end of the second, or beginning of the third week, or about the period when the scab is completed, the distant eruptions

will assume the vaccine character, and heal in a few days after. In the last case we can have no doubts of the security of our patient, but as was before observed whenever the inoculated part becomes purulent from this or any other cause, it is absolutely necessary to vaccinate again.

If after repeating our vaccination, on account of the backwardness of the first, we find the same difficulties in the second, we may make a third attempt, but if this should fail also, the health of the patient should be attended to, and, when restored, the attempt may be renewed. If there is no apparent obstacle in the

health, we should still defer our insertion for a few months, and after repeating it then, if the same difficulties remain, we must leave it to the patient to determine when and whether he will wish to make any future trial. At the same time we should enquire whether any others of the family have resisted every exposure to small pox infection and every attempt at inoculation.

It is generally said that vaccination produces no local effects but at the part to which the fluid is inserted. This is for the most part true ; but it is unquestionable that what are called secondary vesicles do sometimes occur: that is, an

eruption of vaccine vesicles at distant parts of the body in the manner that small pox pustules appear after the inoculation of that disease. It has been urged by some that these eruptions after cow pox are the effect of a second inoculation by the patient carrying the fluid of the first to a distant part. But this is easily distinguished. When matter is carried in this way, the vesicle formed always finishes its progress at the same time as at the part first inoculated : whereas secondary vesicles never *appear* till the close of the second or beginning of the third week, when the original vesicle has begun to scab.

Besides these secondary vesicles a number of small hard elevations

sometimes occur at different periods of vaccination, most commonly at the commencement of scabbing. They are of no consequence, and subside without any other than the common remedies.

In the Small Pox Hospital in a very few instances, small variolous pustules have appeared after the vaccine scab has formed. They may always be distinguished from the secondary vaccine vesicles by their opaque purulent appearance, they always contain pus, and the fluid taken from them will produce a genuine small pox. On this account it is necessary to distinguish them from secondary vaccine vesicles, which contain a transparent fluid, and by inoculation

produce the true disease with as much uniformity as the primary vesicle.

We have said nothing of fever which is for the most part too trifling to notice. In grown subjects restlessness, thirst, and heat often attend a sympathetic swelling under the arm-pit. In young subjects these symptoms are so little noticed as to be sometimes confounded with the temporary ailments to which that age is liable. If the fever, however, or uneasiness under the arm should be very considerable at any age, it must be considered as a deviation from the common law, and treated according to the symptoms.

APPENDIX, No. 1.

REPORT

*Of the Royal College of Physicians of Lon-
don on Vaccination.*

THE Royal College of Physicians of London having received his MAJESTY'S commands, in compliance with an address from the House of Commons, "to inquire into the state of Vaccine Inoculation in the United Kingdom, to report their opinion and observations upon that practice, upon the evidence which has been adduced in its support, and upon the causes which have hitherto retarded its general adoption;"—have applied themselves diligently to the business referred to them.

Deeply impressed with the importance of an inquiry which equally involves the lives of individuals,

and the public prosperity, they have made every exertion to investigate the subject fully and impartially. In aid of the knowledge and experience of the members of their own body, they have applied separately to each of the licentiates of the college; they have corresponded with the colleges of physicians of Dublin and Edinburgh; with the colleges of surgeons of London, Edinburgh, and Dublin; they have called upon the societies established for vaccination, for an account of their practice, to what extent it has been carried on, and what has been the result of their experience; and they have, by public notice, invited individuals to contribute whatever information they had severally collected. They have in consequence been furnished with a mass of evidence communicated with the greatest readiness and candour, which enables them to speak with confidence upon all the principal points referred to them.

I. During eight years which have elapsed since Dr. Jenner made his discovery public, the progress of vaccination has been rapid, not only in all parts of the United Kingdom, but in every quarter of the civilized world. In the British islands some hundred thousands have been vaccinated, in our possessions in the East Indies upwards of 800,000, and among the nations of Europe the practice has be-

come general. Professional men have submitted it to the fairest trials, and the public have, for the most part, received it without prejudice. A few indeed have stood forth the adversaries of vaccination, on the same grounds as their predecessors who opposed the inoculation for the small pox, falsely led by hypothetical reasoning in the investigation of a subject which must be supported or rejected, upon facts and observation only. With these few exceptions, the testimony in favour of vaccination has been most strong and satisfactory, and the practice of it, though it has received a check in some quarters, appears still to be upon the increase in most parts of the United Kingdom.

II. The college of physicians, in giving their observations and opinions on the practice of vaccination, think it right to premise, that they advance nothing but what is supported by the multiplied and unequivocal evidence which has been brought before them, and they have not considered any facts as proved but what have been stated from actual observation.

Vaccination appears to be in general perfectly safe; the instances to the contrary being extremely rare. The disease excited by it is slight, and seldom prevents those under it from following their ordinary occupations. It has been communicated with

safety to pregnant women, to children during dentition, and in their earliest infancy; in all which respects it possesses material advantages over inoculation for the small pox; which, though productive of a disease generally mild, yet sometimes occasions alarming symptoms, and is in a few cases fatal.

The security derived from vaccination against the small pox, if not absolutely perfect, is as nearly so as can perhaps be expected from any human discovery; for amongst several hundred thousand cases, with the results of which the college have been made acquainted, the number of alledged failures has been surprizingly small, so much so, as to form no reasonable objection to the general adoption of vaccination; for it appears that there are not nearly so many failures, in a given number of vaccinated persons, as there are deaths in an equal number of persons inoculated for the small pox. Nothing can more clearly demonstrate the superiority of vaccination over the inoculation of the small pox, than this consideration; and it is a most important fact, which has been confirmed in the course of this inquiry, that in almost every case, where the small pox has succeeded vaccination, whether by inoculation or by casual infection the disease has varied much from its ordinary

course; it has neither been the same in violence, nor in the duration of its symptoms, but has, with very few exceptions, been remarkably mild, as if the small pox had been deprived, by the previous vaccine disease, of all its usual malignity.

The testimonies before the college of physicians are very decided in declaring, that vaccination does less mischief to the constitution, and less frequently gives rise to other diseases, than the small pox, either natural or inoculated.

The college feel themselves called upon to state this strongly, because it has been objected to vaccination, that it produces new, unheard-of, and monstrous diseases. Of such assertions no proofs have been produced, and, after diligent inquiry, the college believe them to have been either the inventions of designing, or the mistakes of ignorant men. In these respects then, in its mildness, its safety, and its consequences, the individual may look for the peculiar advantages of vaccination. The benefits which flow from it to society are infinitely more considerable; it spreads no infection, and can be communicated only by inoculation. It is from a consideration of the pernicious effects of the small pox, that the real value of vaccination is to be estimated. The natural small pox has been supposed to destroy a sixth part of all whom it

attacks ; and that even by inoculation, where that has been general in parishes and towns, about one in 300 has usually died. It is not sufficiently known, or not adverted to, that nearly one-tenth, some years more than one-tenth, of the whole mortality in London, is occasioned by the small pox ; and however beneficial the inoculation of the small pox may have been to individuals, it appears to have kept up a constant source of contagion, which has been the means of increasing the number of deaths by what is called the natural disease. It cannot be doubted that this mischief has been extended by the inconsiderate manner in which great numbers of persons, even since the introduction of vaccination, are still every year inoculated with the small pox, and afterwards required to attend two or three times a week at the places of inoculation, through every stage of their illness.

From this, then, the public are to expect the great and uncontroverted superiority of vaccination, that it communicates no casual infection, and, while it is a protection to the individual, it is not prejudicial to the public.

III. The college of physicians in reporting their observations and opinions on the evidence adduced in support of vaccination, feel themselves authorised to state that a body of evidence so large,

so temperate, and so consistent, was perhaps never before collected upon any medical question. A discovery so novel, and to which there was nothing analogous known in nature, though resting on the experimental observations of the inventor, was at first received with diffidence: it was not, however difficult for others to repeat his experiments, by which the truth of his observations was confirmed, and the doubts of the cautious were gradually dispelled by extensive experience. At the commencement of the practice, almost all that were vaccinated were afterwards submitted to the inoculation of the small pox; many underwent this operation a second, and even a third time, and the uniform success of these trials quickly bred confidence in the new discovery. But the evidence of the security derived from vaccination against the small pox does not rest alone upon those who afterwards underwent variolous inoculation, although amounting to many thousands; for it appears, from numerous observations communicated to the college, that those who have been vaccinated are equally secure against the contagion of epidemic small pox. Towns indeed, and districts of the country in which vaccination had been general, have afterwards had the small pox prevalent on all sides of them without suffering from the contagion. There are also

in the evidence a few examples of epidemic small pox having been subdued by a general vaccination. It will not, therefore, appear extraordinary that many who have communicated their observations should state, that though at first they thought unfavourably of the practice, experience had now removed all their doubts.

It has been already mentioned, that the evidence is not universally favourable, although it is in truth nearly so, for there are a few who entertain sentiments differing widely from those of the great majority of their brethren. The college, therefore, deemed it their duty, in a particular manner, to enquire upon what grounds and evidence the opposers of vaccination rested their opinions. From personal examination, as well as from their writings, they endeavoured to learn the full extent and weight of their objections. They found them without experience in vaccination, supporting their opinions by hearsay information, and hypothetical reasoning, and, upon investigating the facts which they advanced, they found them to be either misapprehended or misrepresented; or that they fell under the description of cases of imperfect small pox, before noticed, and which the college have endeavoured fairly to appreciate.

The practice of vaccination is but of eight years

standing, and its promoters, as well as opponents, must keep in mind, that a period so short is too limited to ascertain every point, or to bring the art to that perfection of which it may be capable. The truth of this will readily be admitted by those acquainted with the history of inoculation for the small pox. Vaccination is now, however, well understood, and its character accurately described. Some deviations from the usual course have occasionally occurred, which the author of the practice has called spurious cow pox, by which the public have been misled, as if there were a true and a false cow pox; but it appears that nothing more was meant, than to express irregularity or difference from that common form and progress of the vaccine pustule from which its efficacy is inferred. Those who perform vaccination ought therefore to be well instructed, and should have watched with the greatest care the regular progress of the pustule, and learnt the most proper time for taking the matter. There is little doubt that some of the failures are to be imputed to the inexperience of the early vaccinators, and it is not unreasonable to expect that farther observation will yet suggest many improvements that will reduce the number of anomalous cases, and furnish the means of deter-

mining, with greater precision, when the vaccine disease has been effectually received.

Though the college of Physicians have confined themselves in estimating the evidence to such facts as have occurred in their own country, because the accuracy of them could best be ascertained, they cannot be insensible to the confirmation these receive from the reports of the successful introduction of vaccination, not only into every part of Europe, but throughout the vast continents of Asia and America.

IV. Several causes have had a partial operation in retarding the general adoption of vaccination; some writers have greatly undervalued the security it affords, while others have considered it to be of a temporary nature only; but if any reliance is to be placed on the statements which have been laid before the college, its power of protecting the human body from the small pox, though not perfect indeed, is abundantly sufficient to recommend it to the prudent and dispassionate, especially as the small pox in the few instances where it has subsequently occurred, has been generally mild and transient. The opinion that vaccination affords but a temporary security is supported by no analogy in nature, nor by the facts which have hitherto

occurred. Although the experience of vaccine inoculation be only of a few years, yet the same disease, contracted by the milkers of cows, in some districts has been long enough known to ascertain that in them, at least the unsusceptibility of the small pox contagion does not wear out by time. Another cause, is the charge against vaccination of producing various new diseases of frightful and monstrous appearance.

Representations of some of these have been exhibited in prints in a way to alarm the feelings of parents, and to infuse dread and apprehension into the minds of the uninformed. Publications with such representations have been widely circulated, and though they originate either in gross ignorance, or wilful misrepresentation, yet have they lessened the confidence of many, particularly of the lower classes, in vaccination; no permanent effects, however, in retarding the progress of vaccination, need be apprehended from such causes, for, as soon as the public shall view them coolly and without surprize, they will excite contempt, and not fear.

Though the college of physicians are of opinion that the progress of vaccination has been retarded in a few places by the above causes, yet they con-

ceive that its general adoption has been prevented by causes far more powerful, and of a nature wholly different. The lower orders of society can hardly be induced to adopt precautions against evils which may be at a distance; nor can it be expected from them if these precautions are attended with expence. Unless therefore, from the immediate dread of epidemic small pox, neither vaccination nor inoculation appear at any time to have been general, and when the cause of terror has passed by, the public have relapsed again into a state of indifference and apathy, and the salutary practice has come to a stand. It is not easy to suggest a remedy for an evil so deeply imprinted in human nature. To inform and instruct the public mind may do much, and it will probably be found that the progress of vaccination in different parts of the United Kingdom will be in proportion to that instruction. Were encouragement given to vaccination, by offering it to the poorer classes without expence, there is little doubt but it would in time supersede the inoculation for the small pox, and thereby various sources of variolous infection would be cut off; but till vaccination becomes general, it will be impossible to prevent the constant recurrence of the natural small pox by means of

those who are inoculated, except it should appear proper to the Legislature to adopt, in its wisdom, some measure by which those who still, from terror or prejudice, prefer the small pox to the vaccine disease may, in thus consulting the gratification of their own feelings, be prevented from doing mischief to their neighbours.

From the whole of the above considerations, the college of physicians feel it their duty strongly to recommend the practice of vaccination. They have been led to this conclusion by no preconceived opinion, but by the most unbiassed judgment, formed from an irresistible weight of evidence which has been laid before them. For when the number, the respectability, the disinterestedness, and the extensive experience of its advocates, is compared with the feeble and imperfect testimonies of its few opposers; and when it is considered that many who were once adverse to vaccination, have been convinced by further trials, and are now to be ranked among its warmest supporters, the truth seems to be established as firmly as the nature of such a question admits; so that the college of physicians conceive that the public may reasonably look forward with some degree of hope to the time when all opposition shall cease, and

the general concurrence of mankind shall at length be able to put an end to the ravages at least, if not to the existence, of the small pox.

LUCAS PEPYS, PRESIDENT.

Royal College of Physicians, }
10th April, 1807. }

Ja. Hervey, Register.

APPENDIX, No. 2.

CORRESPONDENCE

WITH

DR. HERVEY,

Register of the Royal College of Physicians.

No. I.

*Copy of a printed Letter from Dr. Hervey to Dr.
Adams, Physician to the Small Pox Hospital.*

SIR,

HIS Majesty has been graciously pleased in compliance with an address from the honorable House of Commons, to direct his Royal College of Physicians of London to enquire into the present state of vaccination in the United Kingdoms, to report their observations and opinions upon that practice, upon the evidence adduced in its support, and upon the causes which have hitherto retarded its general adoption.

The College are now engaged in the investigation of these several propositions, and request you to communicate to them the result of your experience and enquiries on the subject, that they may be thereby assisted in making their report as perfect as possible.

I am, Sir,

Your most obedient Servant,

JAMES HERVEY,

Register.

By order of the Royal College }
of Physicians, Oct. 23, 1806. }

No. II.

*Copy of a Letter from Dr. Joseph Adams, to Dr.
Hervey of the College of Physicians.*

Berners-Street, 17th November, 1806.

SIR,

I HAVE been honoured with your circular expressing the wish of the Royal College of Physicians to comply with his Majesty's gracious command, relative to cow pox.

The college are pleased to expect a communication on the three following points :

1st, My own experience in vaccination.

2dly, The result of my enquiries.

3dly, My opinion of the causes which have hitherto prevented its general adoption.

1st, My own experience fully confirms all that *Dr. Jenner* promised in his Enquiry into the Causes and Effects of Cow pox.

2dly, I have made no digest of my enquiries excepting as they lead to experiment, which are consequently included in the former answer.

3dly, Besides the prudent backwardness of most

in admitting novelties into practice without ample proof of their utility, the causes which have prevented the general adoption of vaccination appear to me to have been principally the mistaken zeal of its friends. It could not be expected that men who value themselves on their talents at investigation, and feel conscious of their scrupulous adherence to truth, could patiently submit to be uncandidly treated for a scepticism induced by events however accidental. When their accuracy was questioned, whilst they disregarded the assertions of their accusers, they became diligent in collecting collateral evidence, and when their reasoning was ridiculed, instead of expressing only their doubts, they became parties in their own defence.

Another inconvenience has arisen from a too great forwardness at answering objections before they were sufficiently matured; hence when variola appeared after vaccination, the event was either denied or explained by so many minute causes as were sufficient to frighten the ignorant, disgust the candid, and induce the prudent to avoid an experiment the result of which was not sufficiently understood.

A practice at one time represented as so simple that the clergy and females were invited to undertake it, became at once so mysterious that only a

chosen few were said to *understand* vaccination; every untoward event was imputed to ignorance between the true and spurious pustule, to taking matter at too late a period, and to other causes still less satisfactory.

Had these uncertainties really existed, they would have been sufficient objections against a practice the object of which is to secure the subject from a formidable disease, and from which he might be secured by another, certainly less desirable, but well-ascertained, operation. But the truth is, that vaccination is as simple as it was at first announced, that the true character of its vesicle is more certain than the local effect of any other morbid poison, that it is impossible to confound it with a pustule of any kind, and that every difficulty might have been avoided by requiring a correct register of the progress from the period of insertion to cicatrization, or for the most part of perfect scabbing.

I am, Sir,

Your obedient

Humble Servant,

JOSEPH ADAMS.

(Signed)

Dr. James Hervey,

&c. &c.

No III.

Copy of a Letter from Dr. Hervey.

College of Physicians,
January 15th, 1807.

SIR,

THE committee of the Royal College appointed to enquire into vaccination, request you to favour them with the evidence which the registers of the Small Pox Hospital afford upon that subject; and that you will address your communication to me at the college.

I am, Sir,

Your most obedient

Humble servant,

(Signed)

JAMES HERVEY.

Register.

To Dr. Adams.

PERSONS VACCINATED at the Small Pox Hospital at Paneras, from
January 21, 1799, to January 1 1807.

TWENTY THOUSAND THREE HUNDRED & TWENTY-THREE.

It appears that out of the above Number the following have taken the casual Small Pox, two of whom have died.

Name of Patient, and place of residence when vaccinated.	Age.	Time of Vaccination.	When caught the Small Pox, and Place of Residence.	By whom seen at the time of Small Pox.
Hodges, Nancy, (registered Ann), Fulwood Rents.	11 months.	Oct. 1st, 1800	Sept. 1801, Fulwood-Rents.	By a very great number of Physicians and other medical Gentlemen who published their names.
Hodges, Mary, Fulwood Rents.	9 months.	May 17th, 1802	Sept. 1801, Fulwood-Rents.	By a very great number of Physicians and other medical Gentlemen who published their names.
Clarke, Elizabeth, Red-Lion-Square.	3 months.	May 21st, 1800	Sept. 1st, 1801, in Copple-row, Clerkenwell.	Dr. William, Messrs. Wachsels, Ring, White of Clerkenwell, and several medical Gentlemen.
Bainbridge, Thomas, Beaumont-street, Marylebone.	3 months.	Feb. 24th, 1800	March 1803, Adam-street, Edgeware-road. <i>Note</i> this case proved fatal.	Dr. Adams, Croft, Henry Frasers, Mr. Wachsels, and others of the profession.
Bainbridge, Harriet, 17 Adam-street, Edgeware-Road.	5 months.	Oct. 11th, 1802	March 1803, Adam-street, Edgeware-road.	Dr. Adams, Croft, H. Fraser, many other Physicians, and medical Gentlemen.
Hart, Mary, 17 Adam-street, Edgeware-Road.	10 months.	Oct. 11th, 1802	March 1803.	Dr. Adams, Croft, H. Fraser, many other Physicians, and medical Gentlemen.
East, James, Chapel-row, Kings.	4 months.	May 9th, 1803	November 1803.	Mr. Savage, apothecary in this neighbourhood, and who had then inoculated the sister from whom the mother supposes he caught the small pox.
Carpenter, Eliz. 20 Chapel-street, Holywell-Mount.	4 months.	May 3d, 1800.	May 1805, Royton-street, Islington-road.	Was brought to the hospital with the small pox which she caught from her sister who was inoculated.
Beattie, Diana, Turnstreet, Berkeley-sq.	5 months.	July 1st, 1799, tested with small pox matter July 9th.	June 1805, Great Barton-street, Marylebone, lately recovered from scarletina.	Dr. Hooper, Adams, Mr. Wachsels, and several medical Gentlemen.
Jones, M. Ann, No. 9, Lambeth-wall.	4 months.	Oct. 18th, 1800	Sept. 1803, Theobald's Road.	Dr. Coombe, who reported to Mr. Wachsels that this child died of a malignant confluent small pox, the worst sort he ever saw.
Mazoyer, Eliz. (registered Nazoyer), Grafton-street, Soho.	18 months.	May 10th, 1802	Sept. 1805, Grafton street, Soho.	Reported by the Mother, who says that the disease went through very quickly, and was seen by several medical Gentlemen.
Morgan, William, Kirkman's Buildings, Tottenham-court-road.	3 months.	April 20th, 1803	Sept. 1803.	Brought to the hospital in a state of recovery from the small pox, by Mr. Hodges.
Thomas Dorman, No. 28, Monmouth-street, Seven-Dials.	8 months.	May 22d, 1804	Oct. 1805.	Messrs. Ring, Wachsels, Roberts, and several gentlemen in the neighbourhood.
Barrell, Prudence, 16 Tottenham-Place.	6 months.	Sept. 22d, 1800	Oct. 1803, Tottenham-Place.	Reported by several women, who attended with their children to be inoculated in consequence.
Gordon, Sarah, Tottenham-Place.	13 months.	April 7th, 1802	Nov. 1805, Tottenham-Place.	Dr. George Pearson who reported the cases to Dr. Adams, and Mr. Wachsels.
Butt, Georgiana, Hankey, Elizabeth, No. 3, Brandy's Passage, Camden-Town.	4 months. 6 months.	Sept. 18th, 1803	March 1806.	By several women, who attended with their children to be inoculated with small pox in consequence.
Gould, Mary No. 7, Little Titchfield-street Marylebone.	8 months.	April 17th, 1801	March 1805.	

At the first introduction of Vaccination a general terror prevailed of sore arms, which induced the physician to apply remedies whenever the appearances were at all severe. There is reason to believe that these applications were injurious, as we have had no trouble with the arms for these last three or four years. The only case of eruption that has been at all troublesome, was — Smith, who has been seen by several persons, and by Mr. Croft who referred the mother to the Small Pox Hospital. The complaint ended in a scabby head which proved tedious but gradually mended, and as the woman has not applied for some time we suppose the child is now well — Another case is reported with some obscurity in the Medical and Chirurgical Review, vol. xiii. Article, page lvii. and cxx.

To Dr. James Henry,
Royal College of Physicians.

(Signed)

JOSEPH ADAMS, *Physician to the Hospitals,*
JOHN CHRISTIAN WACHSEL, *Apothecary.*

Since the above was collected, the following cases have occurred. Thomas Peppall, aged six years, Britannia-street, Gray's-Inn-lane, vaccinated at the Inoculation Hospital four years ago, has two circumses. On the 11th of July 1807, brought to the hospital with the small pox, being the sixth day of disease, and fourth of the eruption, seen by Dr. Adams and Mr. Wachsels.

Ann Zelenigist, aged three years and eight months, Upper Fitzroy-street, vaccinated at the Inoculation Hospital, April 16th, 1801, caught the small pox August the 1st, was seen on the 7th of August, has 400 pustules of the distinct kind, hard, indented, circumscribed, matured, fever continued till this morning. Mr. Wachsels dissected one of the pustules, and exhibited the characteristic slough to Mr. Draper.

Christopher Bridger, aged four years and three months, No. 286, Oxford-street, vaccinated at the hospital February 2d, 1807. The mother reports that he died of the natural small pox, July 13th, 1807, at Bright-helmstone, attended by Dr. Barrett, and seen by Mr. Blair and several medical gentlemen.

W. Weaver, who was reported to have the small pox last month, was vaccinated at the hospital March 7th, 1808, but the register of that date marks the case as doubtful. — The mother says he was vaccinated a second time probably without effect, which might have given rise to the supposed security.

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APPENDIX, No. 3.

DR. WILLAN has already prepared the public for the result of those enquiries which have in part been detailed in this work from the registers of the Small Pox Hospital*. But the following series of inoculations have so satisfactorily proved that a mild small pox may be perpetuated by successive insertions, that until any contradictory evi-

* “Dr. Adams inoculates twelve persons with selected matter, then from the mildest case of the twelve he inoculates twelve more. When this process has been several times repeated, the matter uniformly produces, by inoculation, a round inflamed pustule, the maturation of which is attended with a moderate degree of fever, and an eruption of distinct, hard, whitish pustules:—but I ought not to anticipate his observations on this curious subject.” *Treatise on Vaccine Inoculation*, page 8, pt. 2.

dence appears, the question must be considered as decided.

In April last, Mary London *, a girl about sixteen years of age, was sent to the Hospital for inoculation : she was inoculated for small pox ; but the effect of inoculation seemed to be superseded by the casual disease received before she came into the house. The applications for inoculation were, at that time, greater than ever, and the suspicion among the mothers of being deceived by inoculation for cow pox not at all abated. On this account a full case if in other respects desirable, was always preferred for the choice of matter, and the present not only offered these advantages, but very much facilitated dispatch, as the matter could be taken without those delays which the apprehension of an infant, or the weakness of a mother, will sometimes occasion. No less than forty-three subjects were inoculated from her at one time ; and though every part exposed was as full as a distinct small pox could well be, yet she refused a scat when offered, assuring us that she felt neither fatigued nor faint. In the progress of the disease she had no secondary fever.

* Mary London, from Ivingo in Bucks, at Thomas London's, labourer, Vine-street, Lambeth.

The whole number inoculated from this subject was eighty-five. Of these sixty-four appear by our register marked *C. V.* (that is, circumscribed vesicle resembling cow pox). Two are marked *clustered*. The remaining nineteen either did not attend with sufficient regularity to ascertain the progress of the arm, or the inoculation failed and was repeated from other sources.

Of the sixty-four whose cases can be ascertained by the register, and by subsequent enquiries, it appears that eight passed through the disease without any secondary pustules, twenty-six had no pustules till after the twelfth day of inoculation, which is about the period of beginning scabbing, [when, as was before remarked, secondary cow pox vesicles appear], and the remaining twenty-six had pustules between the tenth and seventeenth days.

It would be tedious and unnecessary to particularise all the subsequent inoculations from this source. It is enough to mention that excepting the above uniformity, the symptoms and quantity of eruption were various. One of them, Charles Horwood's * arm, retaining its vaccine character till the eleventh day, was so particularly favourable, that I selected it for inoculation. This

* No. 1, Johnson's Place, Laundry-Yard, Westminster.

proved one of the subjects in whom no secondary pustules appeared. As far as our register and subsequent enquiries inform us, all who were inoculated from this source, passed through the disease without any secondary pustules, though in some the fever was considerable. From one of them, (Caroline Gear *, on the tenth day after inoculation, when the arm still retained the regular circumscription of the vaccine vesicle) three subjects were inoculated, in all of whom the disease retained its character. From these cases, inoculations have been continued for a succession of eight series, each consisting of several subjects, and in all the same character has been preserved.

Edward Stevens and Fanny Meredith, were inoculated from matter one remove from Caroline Gear. On the sixth day the insertion having made no progress they were reinoculated from matter two removes from the same. On the tenth day from the first inoculation both the insertions appeared to have taken place though somewhat backward. On the twelfth and thirteenth day each had fever, and the arms showed a circumscribed vesicle. In Meredith an areola surrounded the vesicle. On the seventeenth day pustules broke out

* No. 4, Tem's Court, Duke-Street, Grosvenor-square.

on Meredith, on the nineteenth the arms were drying, and Meredith had 200 pustules, Stevens 400.

From Stevens fluid was taken both from the arm and the pustules to inoculate others. The fluid from the arm produced the vaccine vesicle, though in a few instances attended with secondary vesicles. The fluid from the pustules produced true small pox pustular cases for three successions. The last of these was Henry Taylor, who had 100 pustules with a circumscribed vesicle on the arm. The latter was uninterrupted till the period when the character was fixed. On the fifteenth day it still remained circumscribed, fluid taken from it was slightly milky, and being inserted in the arm of Esther Edgley, produced a more perfect vaccine vesicle through the whole of its stages, than we had met with from Horwood's uninterrupted source.

The above facts show an analogy between these two diseases which makes it less surprising that the passing through one should render the constitution no longer susceptible of the other. It must, however, be remarked that in all the cases from Horwood to this time the disease has never shown what may be called the strong vaccine character. The fever has been greater and the scab flatter and without that thickened circumference

which follows the mallow-seed vesicle as it dries. It is true there are varieties in cow pox in which, as was before observed, the local complaint approaches small pox inoculation. The only difference seems that none of the subjects inoculated from London's source have shown a scab approaching nearer to the vaccine than those vaccine scabs which approach nearest to small pox scab.

It must be added that these events have not to boast more than a succession of eight insertions during a period of about eighteen weeks. They are not, therefore, entitled to the degree of confidence as to the probability of retaining a permanent character, which the cow-pox may claim, nor is there any proof that these vesicles are not infections. The facts are, however, highly important, and quite sufficient to show that we were hasty in determining that the *kind* of small pox matter used for inoculation, was unimportant.

Though only those few names are above related in order to preserve the connection, yet the insertions amount to at least two or three hundred, the registers of which are accessible to any who apply properly introduced.

APPENDIX, No. 4.



As many persons who have considerably engaged in vaccination, profess never to have seen secondary vesicles, [vaccine eruptions on parts of the body remote from the first insertion] and as their appearance adds another proof of the analogy between the vaccine and variolous poisons, it may not be amiss to say a few words on the subject.

There is no reason to doubt that the secondary eruptions remarked by Dr. Woodville at the beginning of the practice were variolous, and in many instances arose from the inoculation of small pox matter a few days after vaccination; a very reasonable precaution considering the seat of so new an experiment. The controversy produced on this occasion between that gentleman and Dr. Jenner ended in both parties admitting that about the end of the second or commencement of the third week

when the inoculated part is beginning to scab; a few scattered eruptions will appear having all the properties of the original vesicle. By some it has been asserted that these secondary vesicles arise from the fluid of the first being carried by the patient's finger to the place where they appear. But this can only be the case when such vesicles appear at an earlier stage, in which case they dry and scab precisely at the same time as the first insertion; whereas secondary vesicles do not appear till about the time when the first insertion is beginning to dry or scab. On this account they may sometimes occur without the knowledge of the vaccinator, who frequently sees nothing of his patient after the areola subsides and the scab begins to form itself in a satisfactory manner.

A more striking resemblance between the two diseases, though a much more rare occurrence in cow-pox, is what may be called a crop of secondary eruptions. I do not recollect that these have been recorded by more than three writers. The first who noticed them was the Rev. Mr. Holt, whose patient had one hundred secondary pustules, from some of which he inoculated eight others and produced the genuine disease.—This is related in *Med. Journal*, vol. ii. p. 402. The second instance is to be met with in the same *Journal*, vol. ix. p. 309,

being an account transmitted by the author of two cases of full vaccine secondary eruptions which occurred in the island of Madeira. The third is by M. Hallé, and to be met with in *Med. and Chirurgical Review*, vol. xv. p. vi. *Miscell.* In this paper the author notices several anomala which appeared during a general vaccination at Lucca in Italy, among the rest he remarks “eruptions of pustules over the whole surface of the body which took place at the time of the appearance of the areola around the inoculated part. These eruptions, which might easily be mistaken for variolous, differed however essentially from them in the manner of their formation, in the order in which they dried away, and especially in the nature of the fluid they contained, which was in no instance truly purulent. The dissimilarity was rendered a matter of demonstration, by inoculation. For not only this fluid did not propagate any thing like small pox, but from some observations there appeared reason to believe, that it was capable of producing the genuine vaccine vesicle.”

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THE END.  
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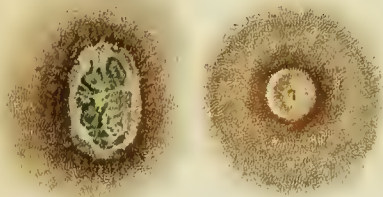
DESCRIPTION OF THE PLATES.

Plate 1, Marks the progress of two vaccine vesicles, the first dated the 10th, the second the 13th day.

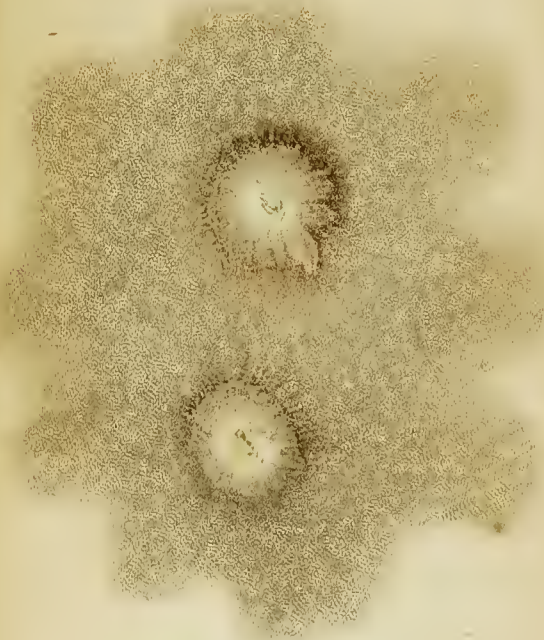
Plate 2, marks a small pox inoculation drying with a regularity approaching the vaccine vesicle.

Plate 3, marks the pearl small pox of *Nancy James**, vesicle on the 12th day.—This was drawn by Dr. Knowles of the Royal Jennerian Institution. The appearance, excepting in size, was so similar to the vaccine vesicle, that he thought it sufficient to take the dimensions, and trust to memory for the rest. The child had several secondary pustules, and the inoculated part on removing the scab afforded a small quantity of pus.

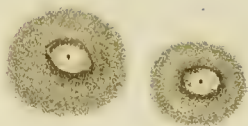
* No. 18, Great Windmill-street.



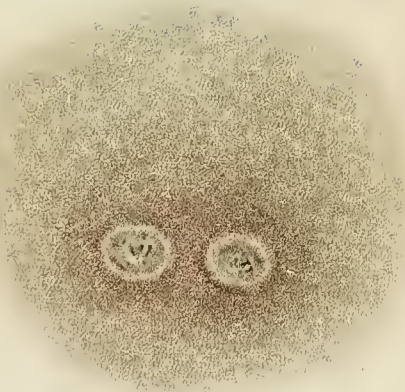








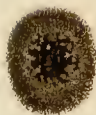
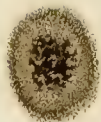
J. S. Walker



J. Muller



Pl. 6.



Stallhar

DESCRIPTION OF PLATES.

The insertions from this subject were numerous and preserved the same character ; but the general prejudice against vaccination and some ill-founded reports induced a suspicion among the mothers that the cow pox was substituted for small pox ; in consequence of this it was found necessary to inoculate from full pustular cases.

Plate 4, Scab of the *vaccine small pox* on the 13th day. [See Appendix, No. 3.]

Plate 5, Ditto on the 18th day.

Plate 6, The vaccine scab in full character.



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